1. A credit-based system for determining a transmit rate from a sender guaranteeing the prevention of underflow and overflow conditions, comprising:

(a) receiver processing apparatus which receives data packets;

(b) storing apparatus, which receives and stores the data packets from the first processing apparatus;

(c) threshold apparatus for updating transmit rates with fixed period coupled to a register apparatus for receiving the updated transmit rate; and

(d) apparatus for communicating an updated transmit fraction to a sender.

2. The receiver of Claim 1 wherein the threshold circuit apparatus further comprises:

(e) a first logic apparatus which calculates an underflow threshold (T1) for the storage apparatus using queuing analysis, having regard to the inequalities

$$T1 > Qmax/8 \qquad \text{Eq(a)}$$

$$T2 < 15*Qmax/16 \qquad \text{Eq(b)}$$

$$T1 <= T2- Qmax/16 \qquad \text{Eq(c)}$$

.

3. The receiver of Claim 1 wherein the threshold circuit apparatus further comprises:

(f) a second logic apparatus which calculates an overflow threshold (T2) for the storage apparatus using queuing analysis likewise having regard to the inequalities

$$T1 > Qmax/8 \quad \text{Eq(a)}$$

$$T2 < 15*Qmax/16 \quad \text{Eq(b)}$$

$$T1 <= T2- Qmax/16 \quad \text{Eq(c)}$$

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4. The receiver of Claim 1 wherein the updated transmit fraction apparatus further comprises:

(g) a first logic apparatus which calculates a first selected transmit fraction update where the storing apparatus contains a quantity of the data packets between thresholds T1 and T2.

5. The receiver of Claim 1 wherein the updated transmit fraction apparatus further comprises:

(h) a second logic apparatus which calculates a second selected credit update value where the storing apparatus contains a quantity of the data packets between thresholds less than T1.

6. The receiver of Claim 1 wherein the updated transmit fraction apparatus further comprises:

(i) a third logic apparatus which calculates a third selected credit update value where the storing apparatus contains a quantity of the data packets between thresholds is greater than T2.

7. The receiver of Claim 1 further comprising:

(j) second processing apparatus to which the updated transmit fraction is communicated.

8. The receiver of Claim 1 further comprising:

(k) communication apparatus which transmits an updated transmit rate to a sender.

9. The receiver of Claim 1 further comprising:

(l) threshold setting apparatus which at initialization selects the values of the thresholds set in the storage apparatus.

10. The receiver of Claim 1 further comprising:

(m) connecting apparatus which connects the register apparatus in the receiver to the update transmit rate register in the sender.

11. A communication system for preventing overflow and underflow in a receiver, comprising:

(a) a sender sending data at a selected transmit rate (Tr) to the receiver;

(b) storage apparatus with occupancy (Q) in the receiver for storing the data;

(c) transmit rate generating apparatus, which generates a transmit rate (Tr) as a feedback signal to the sender in a regular time interval (Dt) for controlling Tr;

(d) threshold apparatus which establishes threshold T1 in Q indicative of the least storage in Q to prevent underflow and threshold T2 indicative of a maximum storage in Q to prevent overflow;

(e) queue monitoring apparatus which determines the level of data storage in the queue at regular time intervals; and

(f) computing apparatus which compares Q to T1 or T2 and communicates to the sender a transmit rate (Tr), every Dt time units where Tr = 0 when T2 <= Q <= Qmax; Tr = Max/2 when T1 <= Q < T2 and Tr = Max when 0 <= Q < T1.

12. The system of Claim 11 further comprising:

(g) initialization algorithm which chooses Dt to be greater than the sum of transmission signal and receiver processing delays.

13. The system of Claim 11 further comprising:

(h) initialization algorithm which chooses Dt to be less than the value Qmax/(Max*8) where Qmax is maximum storage capacity of data in the receiver and Max is the maximum sending rate possible from the sender.

14. The system of Claim 11 further comprising

(i) communication apparatus for transmitting the transmit rate from the receiver unit to the sender as a feedback signal controlling the transmit rate.

15. In a communication system, a method for preventing overflow and underflow in a receiver comprising the steps of:

(a) transmitting data at a selected transmit rate Tr from the sender to the receiver;

(b) temporarily storing data awaiting processing in a storage apparatus Q;

(c) generating a transmit rate (Tr) as a feedback signal to the;

(d) establishing a threshold T1 in the Q indicative of the least storage in the Q to prevent underflow;

(f) establishing a threshold T2 in the Q indicative of the maximum storage in the Q to prevent overflow;

(g) determining the level of data storage Q in the queue at regular intervals of duration Dt; and computing and communicating a transmit rate Tr every Dt time units where Tr = 0 when T2 <= Q <= Qmax; Tr = Max/2 when T1 <= Q < T2 and Tr = Max when 0 <= Q < T1.

16. The method of Claim 15 further comprising the step of:

(h) choosing Dt to be greater than the sum of transmission signal and receiver processing delays.

17. The method of Claim 15 further comprising the step of:

(i) limiting the value of Dt to be less than the value Qmax/(Max*8) where Qmax is maximum storage capacity of data in the receiver and Max is the maximum sending rate possible from the sender.

18. The method of Claim 15 further comprising the step of:

(j) communicating the transmit rate from the receiver unit to the sender as a feedback signal controlling the transmit rate.

19. A medium, executed in a computer system, for preventing overflow and underflow in a receiver comprising:

(a) program instruction transmitting data from a sender to a receiver at a transmit rate (Tr) refreshed with regular period (Dt);

(b) program instruction storing the data in a storage apparatus Q in the receiver;

(c) program instruction generating a transmit rate (Tr) as a feedback signal to the sender in a regular interval (Dt) for controlling the transmit rate Tr;

(d) program instruction establishing a threshold T1 in the Q indicative of the least storage in the Q to prevent underflow;

(e) program instruction establishing a threshold T2 in the Q indicative of the maximum storage in the Q to prevent overflow;

(f) program instruction determining the level of data storage in the queue at credit intervals; and

program instruction computing and transmitting a transmit rate every Dt time units where where Tr = 0 when T2 <= Q <= Qmax; Tr = Max/2 when T1 <= Q < T2 and Tr = Max when 0 <= Q < T1.

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20. The medium of Claim 19 further comprising the step of:

(g) program instruction choosing at initialization the value Dt to be greater than the sum of transmission signal and receiver processing delays.

21. The medium of Claim 19 further comprising the step of:

(h) program instruction choosing at initialization the value Dt to be less than the value Qmax/(Max*8) where Qmax is maximum storage capacity of data in the receiver and Max is the maximum sending rate possible from the sender.

22. The medium of Claim 19 further comprising the step of:

(i) program instruction communicating the transmit rate from the receiver unit to the sender as a feedback signal controlling the transmit rate.